**First Quarter – 8th Grade**

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| **Strand** | **Concept** | **PO** | **ITEM DESCRIPTION** | **Glencoe** | **Vocabulary** |
| 1 | **1. Number Sense** - Understand and apply numbers, ways of representing numbers, and the relationships among numbers and different number systems. | 1 | Compare and order real numbers including very large and small integers, and decimals and fractions close to zero. | 2.2 |  |
| 3.4 | irrational number |
| real number |
| 2 | Classify real numbers as rational or irrational. | 1.6 |  |
| 2.1 | bar notation |
| rational number |
| repeating decimal |
| terminating decimal |
| 3.4 |  |
| 3 | Model the relationship between the subsets of the real number system. | 3.4 |  |
| 4 | Model and solve problems involving absolute value. | 1.3 | absolute value |
| coordinate |
| inequality |
| integer |
| negative number |
| **2. Numerical Operations** - Understand and apply numerical operations and their relationship to one another. | 1 | Solve problems with factors, multiples, divisibility or remainders, prime numbers, and composite numbers. | Course 2 4.1 (word Problem practice) | composite number |
| factor tree |
| prime factorization |
| prime number |
| Course 2 4.2 (word Problem practice) | GCF |
| Venn diagram |
| Course 2 4.8 (word Problem practice) | LCM |
| multiples |
| Course 2 Pg 734 |  |
| 2 | Describe the effect of multiplying and dividing a rational number by, a number less than zero, a number between zero and one, one, and a number greater than one. | 2.3 | dimensional analysis |
| 2.4 | multiplicative inverses |
| reciprocals |
| 4 | Convert standard notation to scientific notation and vice versa (include positive and negative exponents). | 2.99 | scientific notation |
| 5 | Simplify numerical expressions using the order of operations that include grouping symbols, square roots, cube roots, absolute values, and positive exponents. | 1.2 | Algebra |
| Algebraic expression |
| Counter example |
| Evaluate |
| Numerical expression |
| Order of Operations |
| Powers |
| variable |
| 1.4 | additive inverse |
| opposites |
| 1.5 |  |
| 1.6 |  |
| 2.9 | base |
| exponent |
| power |
| 3.1 | perfect square |
| radical sign |
| square root |
| **3. Estimation** - Use estimation strategies reasonably and fluently while integrating content from each of the other strands. | 2 | Estimate the location of rational and common irrational numbers on a number line. | 3.2 |  |
| 3.4 |  |
| 3 | **1. Patterns** - Identify patterns and apply pattern recognition to reason mathematically while integrating content from each of the other strands. | 1 | Recognize, describe, create, and analyze numerical and geometric sequences using tables, graphs, words, or symbols; make conjectures about these sequences. | 2.8 |  |
| **3. Algebraic representations** - Represent and analyze mathematical situations and structures using algebraic representations. | 1 | Write or identify algebraic expressions, equations, or inequalities that represent a situation. | 1.7 | equation |
| 2 | Evaluate an expression containing variables by substituting rational numbers for the variables. | 1.2 |  |
| 2.5 | like fraction |
| 2.6 | unlike fraction |
| 2.7 |  |
| 3 | Analyze situations, simplify, and solve problems involving linear equations and inequalities using the properties of the real number system. | 1.9 | inverse operations |
| solution |
| solve |
| 1.99 |  |
| 4 | **1. Geometric Properties** - Analyze the attributes and properties of 2- and 3- dimensional figures and develop mathematical arguments about their relationships. | 4 | Use the Pythagorean Theorem to solve problems. | 3.6 |  |
| **3. Coordinate Geometry -** Specify and describe spatial relationships using rectangular and other coordinate systems while integrating content from each of the other strands. | 1 | Make and test a conjecture about how to find the midpoint between any two points in the coordinate plane. | Supplement |  |
| 2 | Use the Pythagorean Theorem to find the distance between two points in the coordinate plane. | 3.7 | coordinate plane |
| 5 | **2. Logic , Reasoning, Problem Solving, and Proof** - Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications. | 1 | Analyze a problem situation to determine the question(s) to be answered. | 1.1 |  |
| 2 | Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem. | 1.1 |  |
| 1.8 |  |
| 2.8 |  |
| 3 | Identify relevant, missing, and extraneous information related to the solution to a problem. | P.S.I. |  |
| 4 | Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution. | 1.1 |  |
| 3.3 | Venn diagram |
| 5 | Apply a previously used problem-solving strategy in a new context. | P.S.I. |  |
| 6 | Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. | P.S.I. |  |
| 7 | Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. | 1.1 |  |
| 2.8 |  |
| 3.3 |  |
| 11 | Identify simple valid arguments using *if… then* statements. | Supplement |  |
| 13 | Verify the Pythagorean Theorem using a valid argument. | 3.5 | hypotenuse |
| legs |
| Pythagorean theorem |

**LA: Looking Ahead (in the back of the text)**

**PSI: Problem Solving Investigation**

**MathScape: supplemental books provided with the adoption**

**Hot Topics: small hard bound book, each classroom has one**

**Second Quarter – 8th Grade**

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| **Strand** | **Concept** | **PO** | **ITEM DESCRIPTION** | **Glencoe** | **Vocabulary** |
| 1 | **1. Number Sense** - Understand and apply numbers, ways of representing numbers, and the relationships among numbers and different number systems. | 4 | Model and solve problems involving absolute value. | 5.2 |  |
| **2. Numerical Operations** - Understand and apply numerical operations and their relationship to one another. | 1 | Solve problems with factors, multiples, divisibility or remainders, prime numbers, and composite numbers. | 4.1 | rate |
| ratio |
| unit rate |
| 3 | Solve problems involving percent increase, percent decrease, and simple interest rates. | 5.8 | discount |
| markup |
| percent of change |
| percent of increase |
| percent of increase |
| selling price |
| **3. Estimation** - Use estimation strategies reasonably and fluently while integrating content from each of the other strands. | 1 | Make estimates appropriate to a given situation. | 5.5 |  |
| 3 | **2. Functions and Relationships** - Describe and model functions and their relationships. | 5 | Demonstrate that proportional relationships are linear using equations, graphs, or tables. | 4.4 | constant rate of change |
| linear relationship |
| **3. Algebraic representations** - Represent and analyze mathematical situations and structures using algebraic representations. | 1 | Write or identify algebraic expressions, equations, or inequalities that represent a situation. | 4.5 | constant of proportionality |
| cross products |
| equivalent ratios |
| proportion |
| 3 | Analyze situations, simplify, and solve problems involving linear equations and inequalities using the properties of the real number system. | 4.5 |  |
| **4. Analysis of Change -** Analyze how changing the values of one quantity corresponds to change in the values of another quantity. | 1 | Interpret the relationship between a linear equation and its graph, identifying and computing slope and intercepts. | 4.3 | rate of change |
| 2 | Solve problems involving simple rates. | 4.1 |  |
| 4 | **1. Geometric Properties -** Analyze the attributes and properties of 2- and 3- dimensional figures and develop mathematical arguments about their relationships. | 1 | Identify the attributes of circles: radius, diameter, chords, tangents, secants, inscribed angles, central angles, intercepted arcs, circumference, and area. | 7.1 | center |
| chord |
| circle |
| circumference |
| diameter |
| pi |
| radius |
| Supplement to add tangents, secant, inscribed angle, central angles and intercepted arcs |  |
| 2 | Predict results of combining, subdividing, and changing shapes of plane figures and solids. | Supplement |  |
| 3 | Use proportional reasoning to determine congruence and similarity of triangles. | 4.7 | congruent |
| corresponding parts |
| polygon |
| scale drawing |
| scale factor |
| similar |
| **2. Transformation of Shapes**  - Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations. | 1 | Model the result of rotations in multiples of 45 degrees of a 2-dimensional figure about the origin. | 6.5 | line of symmetry |
| rotational symmetry |
| line symmetry |
| Supplement to add 45 degree |  |
| 2 | Describe the transformations that create a given tessellation. | 6.7 | translation |
| supplement to add tessellations |  |
| 3 | Identify lines of symmetry in plane figures or classify types of symmetries of 2-dimensional figures. | 6.5 |  |
| **4. Measurement** - Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements. | 1 | Solve problems involving conversions within the same measurement system. | Pg 742-743 |  |
| 2 | Solve geometric problems using ratios and proportions. | 4.7 |  |
| 4.9 | indirect measurement |
| 3 | Calculate the surface area and volume of rectangular prisms, right triangular prisms, and cylinders. | 7.4 | base |
| coplanar |
| edge |
| face |
| polyhedron |
| prism |
| pyramid |
| solid |
| vertex |
| 7.5 | composite solid |
| cylinder |
| volume |
| 7.7 | lateral face |
| lateral surface area |
| total surface area |
| 5 | **1. Algorithms and Algorithmic Thinking** - Use reasoning to solve mathematical problems. | 1 | Create an algorithm to solve problems involving indirect measurements, using proportional reasoning, dimensional analysis, and the concepts of density and rate. | 4.5 |  |
| 4.7 |  |
| 4.9 |  |
| **2. Logic , Reasoning, Problem Solving, and Proof** - Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications. | 1 | Analyze a problem situation to determine the question(s) to be answered. | 4.6 |  |
| 6.2 | image |
| inductive reasoning |
| 2 | Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem. | 4.6 |  |
| 5.5 |  |
| 6.2 |  |
| 3 | Identify relevant, missing, and extraneous information related to the solution to a problem. | P.S.I. |  |
| 5 | Apply a previously used problem-solving strategy in a new context. | P.S.I. |  |
| 6 | Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. | P.S.I. |  |
| 7 | Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. | 4.6 |  |
| 8 | Describe when to use proportional reasoning to solve a problem. | 4.2 | nonproportional |
| proportional |
| 4.9 |  |
| 10 | Solve logic problems involving multiple variables, conditional statements, conjectures, and negation using words, charts, and pictures. | 6.2 |  |
| 11 | Identify simple valid arguments using *if… then* statements. | Supplement |  |

**Third Quarter – 8th Grade**

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| **Strand** | **Concept** | **PO** | **ITEM DESCRIPTION** | **Glencoe** |  |
| 2 | **1. Data Analysis (Statistics)** - Understand and apply data collection, organization, and representation to analyze and sort data. | 1 | Solve problems by selecting, constructing, interpreting, and calculating with displays of data, including box and whisker plots and scatter plots. | 9.9 | scatter plot |
| 3 | **1. Patterns** - Identify patterns and apply pattern recognition to reason mathematically while integrating content from each of the other strands. | 1 | Recognize, describe, create, and analyze numerical and geometric sequences using tables, graphs, words, or symbols; make conjectures about these sequences. | 9.1 | arithmetic sequence |
| common difference |
| sequence |
| term |
| Supplement to geometric sequences |  |
| **2. Functions and Relationships** - Describe and model functions and their relationships. | 1 | Sketch and interpret a graph that models a given context; describe a context that is modeled by a given graph. | 9.3 | linear function |
| 10.2 | quadratic function |
| 10.3 |  |
| 2 | Determine if a relationship represented by a graph or table is a function. | 9.2 | domain |
| function |
| function table |
| range |
| 9.3 |  |
| Supplement |  |
| 3 | Write the rule for a simple function using algebraic notation. | 9.2 |  |
| 4 | Identify functions as linear or nonlinear and contrast distinguishing properties of functions using equations, graphs, or tables. | 9.3 |  |
| 10.1 | non-linear function |
| **3. Algebraic representations** - Represent and analyze mathematical situations and structures using algebraic representations. | 3 | Analyze situations, simplify, and solve problems involving linear equations and inequalities using the properties of the real number system. | 8.1 | coefficient |
| constant |
| equivalent expressions |
| like terms |
| simplest form |
| simplify the expression |
| term |
| 8.2 | 2 step equation |
| 8.3 |  |
| 8.4 |  |
| 8.6 |  |
| 8.7 |  |
| 8.8 |  |
| 4 | Translate between different representations of linear equations using symbols, graphs, tables, or written descriptions. | 8.3 |  |
| 8.4 |  |
| 5 | Graph an inequality on a number line. | 8.6 |  |
| **4. Analysis of Change** - Analyze how changing the values of one quantity corresponds to change in the values of another quantity. | 1 | Interpret the relationship between a linear equation and its graph, identifying and computing slope and intercepts. | 9.4 | rise |
| run |
| slope |
| 9.6 | slope intercept form |
| y-intercept |
| 5 | **2. Logic, Reasoning, Problem Solving, and Proof** - Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications. | 1 | Analyze a problem situation to determine the question(s) to be answered. | 8.5 |  |
| 9.8 |  |
| 2 | Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem. | 8.5 |  |
| 9.8 |  |
| 3 | Identify relevant, missing, and extraneous information related to the solution to a problem. | P.S.I. |  |
| 5 | Apply a previously used problem-solving strategy in a new context. | P.S.I. |  |
| 6 | Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. | P.S.I. |  |
| 7 | Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. | 9.8 |  |
| 9 | Make and test conjectures based on information collected from explorations and experiments. | 8.5 |  |
| 11 | Identify simple valid arguments using *if… then* statements. | Supplement |  |
| 12 | Make, validate, and justify conclusions and generalizations about linear relationships. | 9.3 |  |

**Fourth Quarter – 8th Grade**

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| **Strand** | **Concept** | **PO** | **ITEM DESCRIPTION** | **Glencoe** |  |
| 2 | **1. Data Analysis (Statistics)** - Understand and apply data collection, organization, and representation to analyze and sort data. | 1 | Solve problems by selecting, constructing, interpreting, and calculating with displays of data, including box and whisker plots and scatter plots. | 11.2 | histogram |
| 11.3 | circle graph |
| 11.4 | mean |
| measures of central tendency |
| median |
| mode |
| range |
| 11.5 | interquartile range |
| lower quartile |
| measures of variation |
| outlier |
| quartiles |
| upper quartiles |
| 11.6 | box and whisker plot |
| 11.7 | stem and leaf plot |
| 2 | Make inferences by comparing the same summary statistic for two or more data sets. | 11.5 |  |
| 11.4 supplement inferences about 2 or more data sets |  |
| 3 | Describe how summary statistics relate to the shape of the distribution. | 11.5 |  |
| 3 | Describe how summary statistics relate to the shape of the distribution. | 11.4 supplement summary statistics and shape of distribution |  |
| 4 | Determine whether information is represented effectively and appropriately given a graph or a set of data by identifying sources of bias and compare and contrast the effectiveness of different representations of data. | 11.8 |  |
| 5 | Evaluate the design of an experiment. | 12.5 | bias sample |
| convenience sample |
| population |
| sample |
| simple random sample |
| stratified random sample |
| systematic random sample |
| unbiased sample |
| voluntary response sample |
| **2. Probability** - Understand and apply the basic concepts of probability. | 1 | Determine theoretical and experimental conditional probabilities in compound probability experiments. | 12.3 | experimental probability |
| theoretical probability |
| 2 | Interpret probabilities within a given context and compare the outcome of an experiment to predictions made prior to performing the experiment. | 12.2 | compound events |
| dependent events |
| 12.5 |  |
|  | independent events |
| 3 | Use all possible outcomes (sample space) to determine the probability of dependent and independent events. | 12.1 | event |
| fundamental counting principle |
| outcome |
| probability |
| random |
| sample space |
| tree diagram |
| **3. Systematic Listing and Counting** -  Understand and demonstrate the systematic listing and counting of possible outcomes. | 1 | Represent, analyze, and solve counting problems with or without ordering and repetitions. | 12.1 |  |
| Course 2 9.4 | permutation |
| 2 | Solve counting problems and represent counting principles algebraically including factorial notation. | Course 2 9.4 |  |
| **4. Vertex-Edge Graphs** -  Understand and apply vertex-edge graphs. | 1 | Use directed graphs to solve problems. | Supplement |  |
| 5 | **2. Logic, Reasoning, Problem Solving, and Proof** - Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications. | 1 | Analyze a problem situation to determine the question(s) to be answered. | 11.1 |  |
| 2 | Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem. | 11.1 |  |
| 3 | Identify relevant, missing, and extraneous information related to the solution to a problem. | P.S.I. |  |
| 5 | Apply a previously used problem-solving strategy in a new context. | P.S.I. |  |
| 6 | Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. | P.S.I. |  |
| 7 | Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. | 11.1 |  |
| 11 | Identify simple valid arguments using *if… then* statements. | Supplement |  |